BibTag
User Manual

(REVISION 1.1)

18 May 2010

Published by:
MYLAPS B.V.
Havenweg 15
6541 AD Nijmegen
The Netherlands

© 2010 No part of this document may be reproduced by any means without the written consent of the publisher.
Whilst every care has been taken to ensure that the information in this document is correct, no liability can be accepted by MYLAPS for loss, damage or injury caused by any errors or omissions in this document.

Manual rev.	Software rev.	Date (d/m/y)	Amendments
(Revision 1.0)	(Revision 1.0)	02/04/10	This is the first version of this manual.
(Revision 1.1)	(Revision 1.0)	18/05/10	CE Declaration added. New cautions added about handling modem/GPS cable.

TABLE OF CONTENTS

1 INTRODUCTION 6
1.1 Scope of this manual. 6
1.2 How to use this manual. 6
2 SAFETY 7
2.1 General safety responsibilities 7
2.2 Warnings and cautions 8
3 PHYSICAL DESCRIPTION 9
3.1 Introduction 9
3.2 Decoder. 10
3.2.1 Decoder panel. 11
3.2.2 Modem/GPS unit. 12
3.2.3 LED status panel. 12
3.3 Antenna mats 13
3.4 Antenna cable 13
3.5 Bibtags 14
4 FUNCTIONAL DESCRIPTION 15
4.1 Basic principle. 15
4.2 Date and time 17
4.3 System controls. 17
4.3.1 Operator controls 17
4.3.2 Main Screen 18
4.4 Menus 19
4.4.1 Markers and Files 21
4.4.2 Timeline Setup 22
4.4.3 General 24
4.4.4 Communication 27
4.4.5 Log 30
4.5 Info screens. 31
4.5.1 Network. 31
4.5.2 EA/SerialNr 32
4.5.3 Versions 32
4.5.4 Passings 32
4.5.5 Battery info 32
5 SETUP AND REMOVAL 33
5.1 Setting up BibTag 33
5.2 Removal and storage 39
6 OPERATION 42
6.1 Create New File 42
6.2 Gunshot 43
6.3 Marker. 43
6.4 Connect external battery. 44
6.5 Retrieve data. 44
6.5.1 Retrieving data (local network via Ethernet cable) 45
6.5.2 Retrieving data (GSM) 46
6.5.3 Retrieving data via internet (Ethernet) 46
7 MAINTENANCE 47
7.1 Periodic maintenance schedules 47
7.2 Clean. 48
7.3 Charge battery 49
7.4 Check/Update software. 50
7.5 Calibrate battery indicators 51
7.6 Remove/replace SIM card. 52

7.7 Replace battery 53
7.8 Replace cables and antennas 53
8 TROUBLESHOOTING 54
8.1 Troubleshooting principles 54
8.2 Start up problems 54
8.3 Errors during operation 54
8.4 Problems with updating software 59
8.5 Reset to factory defaults 59
8.6 GPS reception is weak or lost 60

LIST OF FIGURES

Figure 3.1 Decoder 10
Figure 3.2 Decoder panel 11
Figure 3.3 Modem/GPS unit 12
Figure 3.4 LED status display 12
Figure 3.5 Antenna mat 13
Figure 3.6 Antenna cable 13
Figure 3.7 BibTag 14
Figure 4.1 Athlete passing antenna mat 16
Figure 4.2 Example mat setups 16
Figure 4.3 Operator controls 17
Figure 4.4 Main screen 18
Figure 4.5 Operator menu structure 20
Figure 4.6 Info screens 31
Figure 8.1 Error message on control screen 54
Figure 8.2 Error lamp 55
Figure 8.3 Pin settings 64

1 INTRODUCTION

1.1 Scope of this manual

This manual is intended for operating, maintenance, and supervisory personnel and provides information on installing, operating, and maintaining your unit.

The manual is divided into the following sections:

- ***Introduction*** - (this section)
- ***Safety*** (page 7): describes all safety aspects required when working with MYLAPS equipment
- ***Physical description*** (page 9): physical descriptions of major components in the unit
- ***Functional description*** (page 15): functional descriptions of the unit
- ***Setup and Removal*** (page 33): site preparation, installation, and connecting power supply and data cables among the components (also how to remove and store the unit if required)
- ***Operation*** (page 42): how to start up, run, and shut down the unit
- ***Maintenance*** (page 47): instructions on how to maintain and repair the equipment. Contains sub-sections for periodic maintenance schedules and corrective maintenance procedures
- ***Troubleshooting*** (page 54): tables with potential problems, causes and solutions
- ***Appendices*** (page 61): contain unit specifications and CE declaration form

NOTE: *Setting up and operating the BibTag system may only be done by MYLAPS trained and certified professionals. Contact MYLAPS for information over the training programs.*

1.2 How to use this manual

This manual is designed to be used in electronic and printed form. Cross references in the online version can be clicked to go directly to the referenced item. Navigation can be done with the bookmarks and/or the table of contents, which contains live links. Page numbers are also provided for ease of use with printed copy.

Before installing, operating or maintaining your BibTag for the first time, always read section *2 Safety* on page 7 to familiarize yourself with the safety aspects of this manual and your system.

To identify individual components, read *3 Physical description* on page 9.

For an explanation of how the unit works, read *4 Functional description* on page 15.

Read both *5 Setup and Removal* on page 33 and *6 Operation* on page 42 completely to overview the steps required to setup and run BibTag. Refer to *8 Troubleshooting* on page 54 to find solutions to setup/operating problems.

When performing scheduled maintenance on BibTag, use *7.1 Periodic maintenance schedules* on page 47 to view the schedules and find the required maintenance procedures. Corrective maintenance is guided from the tables in section *8 Troubleshooting* on page 54.

Refer to the *Appendices* on page 61 for an overview of the technical specifications.

2 SAFETY

This section describes all safety aspects required when working with MYLAPS equipment. The safety aspect can relate to potential equipment damage or to danger to personnel working with this equipment or in the vicinity.

- When installing, operating or maintaining equipment, closely follow the prescribed instructions in this manual, and use common sense at all times
- If ever in doubt about how to do a job or task safely, always ask for assistance

2.1 General safety responsibilities

High voltages, thermal and stored energy hazards are present in MYLAPS systems. Therefore, pay special attention to safety when transporting, operating and maintaining each system, including:

- Meet all applicable codes, laws and local regulations
- When transporting the MYLAPS BibTag decoders by air, use a transport agency that is approved for the safe handling and transport of hazardous goods in accordance with the global safety standards and the rules and regulations of IATA/ICAO. MYLAPS can supply the MSDS and the Lithium Battery UN38.3 test report for the lithium batteries in the decoders, but takes no further responsibility for incorrect transport methods.
- Read and understand each item in this manual and follow the installation, operator and maintenance procedures exactly
- Always use the correct tools for the job
- Take recommended precautions—never take short cuts

FCC Declaration
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

RoHS Compliant
This equipment has been tested and found to comply with the limits for RoHS compliant materials. These limits require manufacturers to ensure that they do not use materials or components that contain restricted substances that may be harmful to the environment.

2.2 Warnings and cautions

The following alerts are used in this manual:

- **WARNINGS** alert users of potentially dangerous situations
- **CAUTIONS** alert users of potential equipment damage

Warnings and cautions in this manual, are indicated by:

- an icon
- the text **WARNING** or **CAUTION**
- a textual description, which states the hazard and how to avoid it

The following icons to highlight and warn of safety aspects are used in this manual, and are attached to the BibTag equipment at appropriate locations:

General Caution or Warning

Dangerous voltage

Grounding required

3 PHYSICAL DESCRIPTION

3.1 Introduction

BibTag is a timing concept for sports where simple setup, plus minimal race handling are needed. The BibTag system is portable and is designed for battery operation during outdoor sports events.

The standard BibTag system consists of the following components:

- Portable BibTag decoder (housed in a sturdy Pelican case)
- 8 x antenna cables - in varying lengths up to 9 m (30 ft)
- Power cable (100 to 240 VAC)
- 8 x antenna mats
- Modem/GPS unit
- This BibTag User Manual

NOTE: *An alternative 4-mat BibTag system is also available with a set of 4 antenna cables and a decoder with 4 antenna connectors.*

The following components can be ordered from MyLaps as options for further expanding the BibTag system:

- Extra antenna cables - varying lengths up to 9 m (30 ft)
- 12 VDC cable with battery terminals
- Ethernet cable - 10 m (33 ft)
- Extra Antenna mats
- BibTags
- USB cable

Additionally, you can purchase the following component from local suppliers:

- SIM card (this will depend on your country and GSM cellular provider)
- Power adaptors

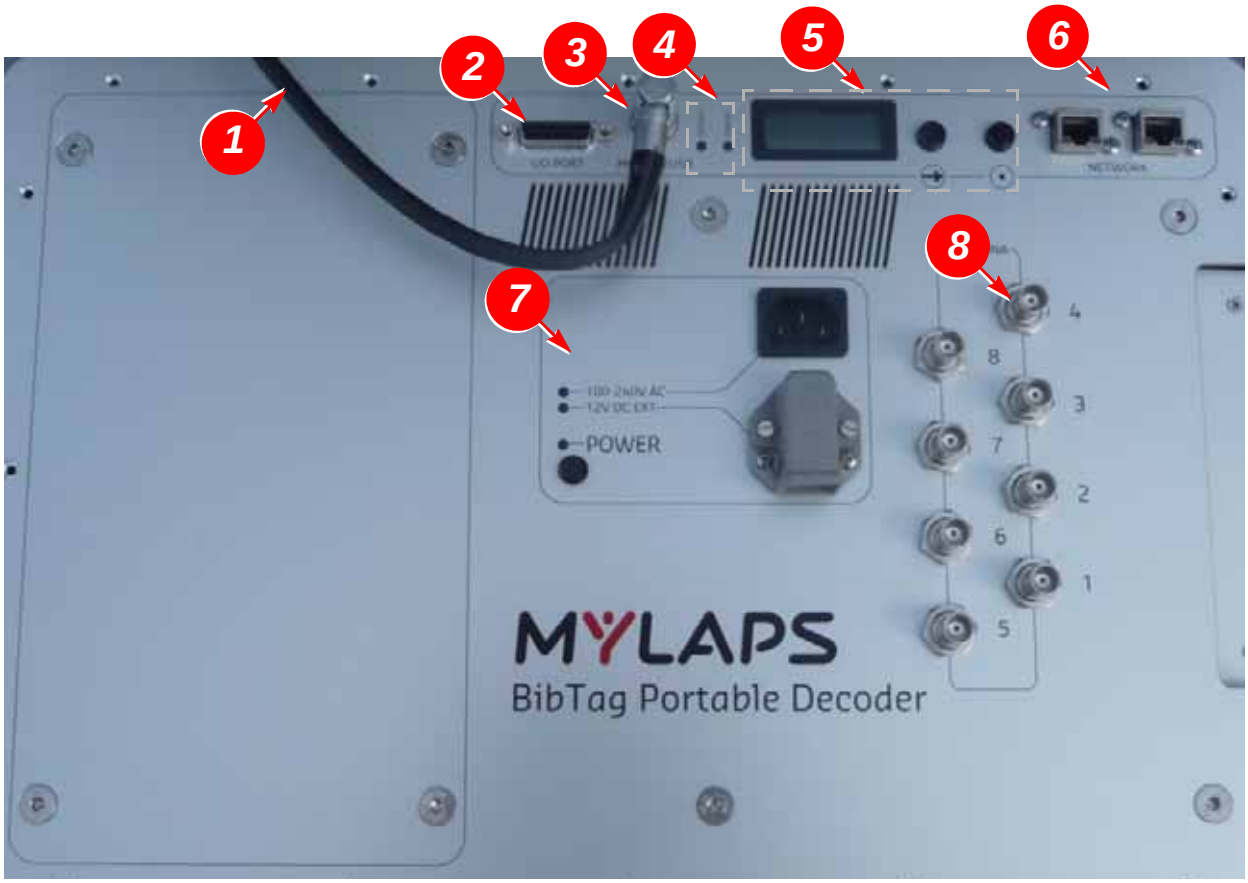
See Appendix *1 Specifications* on page 62 for complete specifications.

3.2 Decoder

1	Upper cover	Hinged upper cover (must be closed during a race to protect decoder from rain)
2	Modem/GPS unit	See *3.2.2 Modem/GPS unit* on page 12
3	Decoder panel	For connecting external devices and operator control (see *3.2.1 Decoder panel* on page 11)
4	LED status display	Shows battery, error and detect status (see *3.2.1 Decoder panel* on page 11)

Figure 3.1 Decoder

3.2.1 Decoder panel

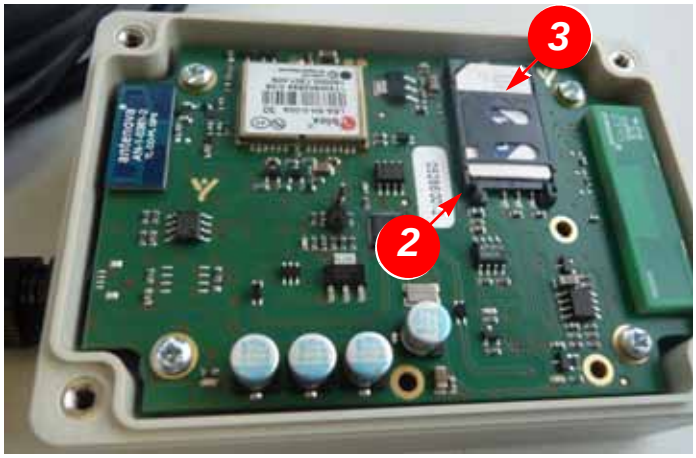


1	Modem/GPS cable	Cable from the Modem/GPS unit (normally stored in cover)
2	I/O port	For connecting external devices (Start gun, etc.) - see *6.2 Gunshot* on page 43
3	Modem/GPS connector	Connect here the Modem/GPS unit (see *3.2.2 Modem/GPS unit* on page 12) or use this port as a USB connector
4	Detect and error LEDs	Detect LED flashes each time a BibTag passes over a connected antenna mat. Error LED flashes if an error is present (see *8 Troubleshooting* on page 54)
5	Operator controls	2 buttons and display for menu selections and status
6	Network connectors	To connect an ethernet cable for a wired connection to a laptop, network or loop-through
7	Power connectors and ‘Power on’ button	Connect an external power source (100-240 VAC or 12 VDC) here if required. Press the Power button to start the unit (the LED lights when power is on)
8	Antenna connectors	Connect here all the antenna cables (1 to 8) that are fed from the detection mats. A 4-antenna system is available with only 4 connectors

Figure 3.2 Decoder panel

3.2.2 Modem/GPS unit

closed

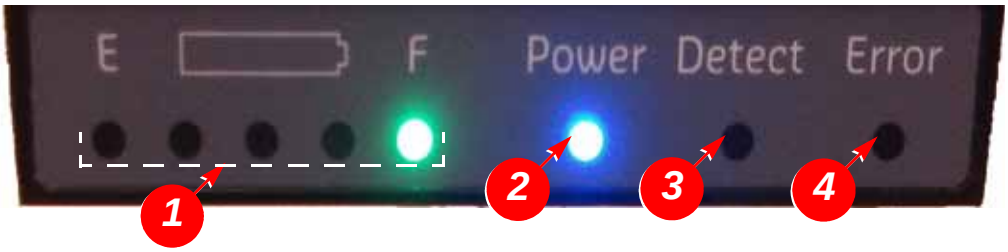


opened

1	Case with attached cable
2	Print board with card holder
3	SIM card (in holder)

Figure 3.3 Modem/GPS unit

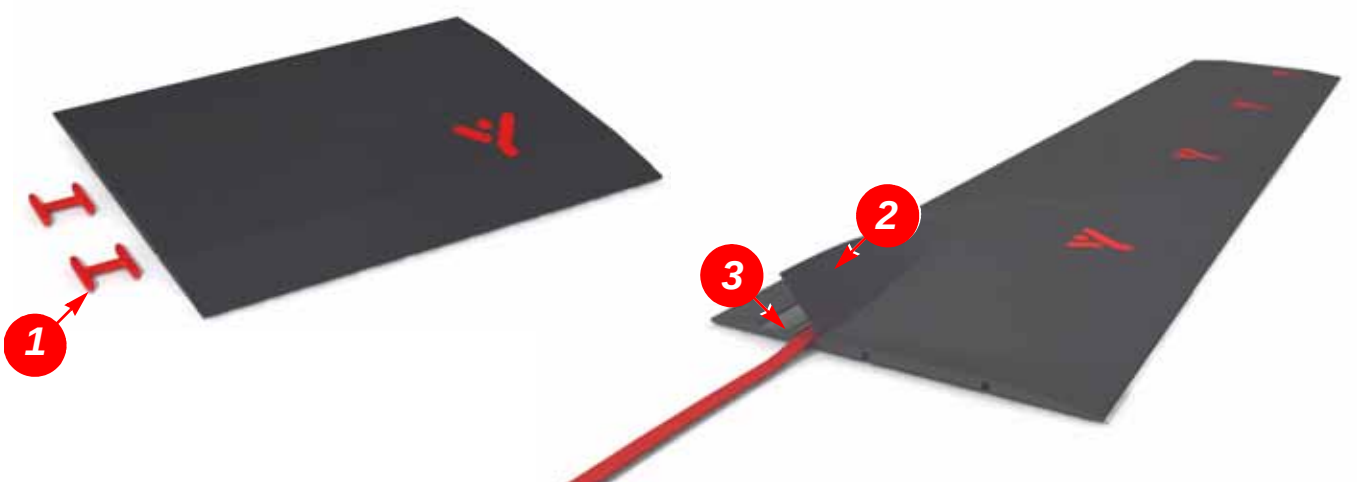
3.2.3 LED status panel



1	Battery level indicators (E = empty; F = full)	The battery level indicator LEDs light up from left to right as the Decoder is charging with the following color definitions: - red = 0-20% full - yellow = 20-40% full - 1st green = 40-60% full - 2nd green = 60-80% full - 3rd green = 80-100% full
2	Power indicator	Lights if the system is powered up and there is sufficient battery/ source power
3	Bib detection indicator	Flashes each time a BibTag passes over a connected antenna mat
4	Error indicator	Flashes if an error is present (see *8 Troubleshooting* on page 54)

Figure 3.4 LED status display

3.3 Antenna mats



1	Dogbone connectors	To connect mats
2	Flap	To protect antenna cables
3	Groove for slotting cables	Antenna cables are connected to the antenna in the center of the mat and fed along these grooves to the next mat or decoder

Figure 3.5 Antenna mat

CAUTION

EQUIPMENT DAMAGE
The antenna cable connections in the BibTag mats are not completely waterproof if the mats are completely submerged in snow or water. Never place the mats in a low lying area where water and snow can enter under the flap and possibly short circuit the antenna connectors

3.4 Antenna cable

1	Connector	Attach this connector to the antenna in the mat
2	Number tag	This number identifies the cable (from 1 to 8) to help when connecting the correct mat to the correct decoder connector
3	Connector (decoder)	Attach this connector to the decoder antenna connector

Figure 3.6 Antenna cable

CAUTION

EQUIPMENT DAMAGE
***Never** use MYLAPS Portable Decoder antenna cables on a MYLAPS BibTag system, and **never** short circuit the Portable BibTag decoder by attaching both ends of an antenna cable to the decoder.*

3.5 Bibtags

1	Race/runner identification
2	BibTag unique identification signals

Figure 3.7 BibTag

The all-weather BibTag is normally in “sleep” mode until activated by the antenna to send a signal to the BibTag Decoder - see *4.1 Basic principle* on page 15 for more on this.

When used in a race, the BibTag must be correctly worn for best reception. See *Figure 3.7* and following recommendations for race participants:

- always keep the BibTag visible; do not remove or cover with a jacket
- do not excessively bend or twist the BibTag
- do not attach beside or under a zip: metal has a negative impact on the BibTag chip
- do not wear on your back or side, or around your arm or leg
- do not cover the BibTag with your hand or arm when crossing the finish line: runners often do this when checking their watch when crossing the line
- always remember that the mat must ‘see’ the number when you cross the finish line
- do not separate the BibTag from the start number

NOTE: *Race organizers can post clear instructions at the ‘Start’ location for correct BibTag use.*

Before use, each BibTag can be checked by passing it over a connected antenna to see it is detected and registered by the decoder (signalled by detection light and/or beep). Always reject any defective chips.

4 FUNCTIONAL DESCRIPTION

4.1 Basic principle

Every participant in a MYLAPS timed event wears a registered BibTag containing a chip. When the BibTag comes in the vicinity of a detection mat, the BibTag continuously starts sending out messages with its unique identification (ID). The antennas in the detection mat receive these ID messages and transfer them to the Decoder. The Decoder determines the BibTag time for each ID by calculating the received signal strength from that BibTag. This passing time is calculated to an accuracy of at least 0.5 seconds.

The BibTag system can operate with one or more decoders and mats, and is responsible for:

- Controlling the antennas in the mats
- Keeping accurate time (via a GPS signal or via an internal clock)
- Data collection and storage (chip codes and times)
- Record a gunshot start so that the equipment can use this same start time as the official time
- Passing data from the Decoders to a central results computer via internet (GSM) with MYLAPS servers, or directly via an ethernet link
- Synchronizing multiple Decoder times via GPS

NOTE: *The antenna field will stop detecting the BibTag after a period of seconds if the tag remains within the antenna field (see 4.4.2.5 Time Between Same Chip on page 24). This means that the BibTag may be assigned a false start time if it has already been detected within the antenna field previous to the start time. To prevent this, the tags detected within the antenna field at the official start time will all receive this official start time.*

Figure 4.1 shows an example setup with 4 antenna mats connected to a single Decoder (more or less mats are possible). Other options can have a double sets of antenna mats in combination with 2 Decoders (useful for a main and backup timing system). See *Figure 4.2* for other example setups.

NOTE: *Main and backup systems are described further in 4.4.2.1 Profile on page 22*

NOTE: *The 4-mat decoder system can only be used with a maximum of 4 mats.*

Figure 4.1 Athlete passing antenna mat

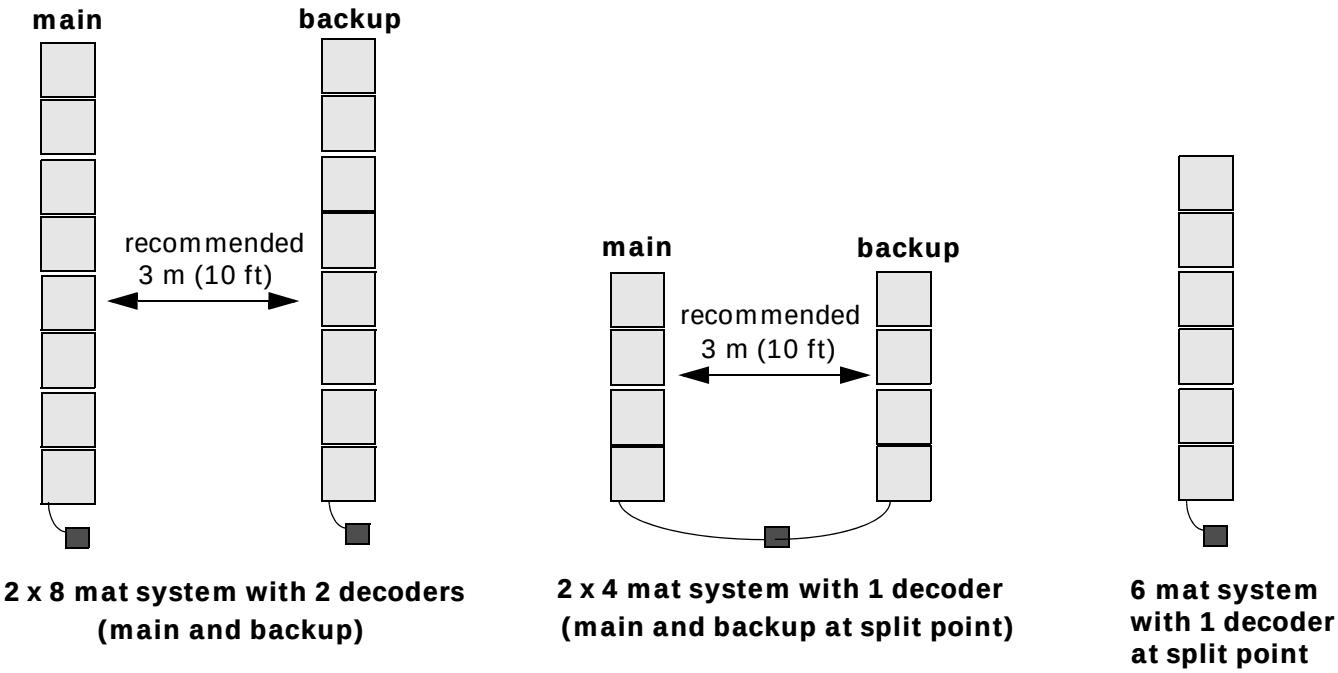


Figure 4.2 Example mat setups

4.2 Date and time

The BibTag internal clock is extremely accurate when recording timing data. It can be synchronized using time signals from GPS satellites. This guarantees precise time synchronization between multiple BibTag systems, and gives extreme accuracy over a long period.

All date and time parameters are set via the menu selections on the control panel. See *4.3.1 Operator controls* on page 17 for more information.

NOTE: *Never change the time during a race. When the BibTag Decoder is powered down, the clock will no longer be accurate.*

4.3 System controls

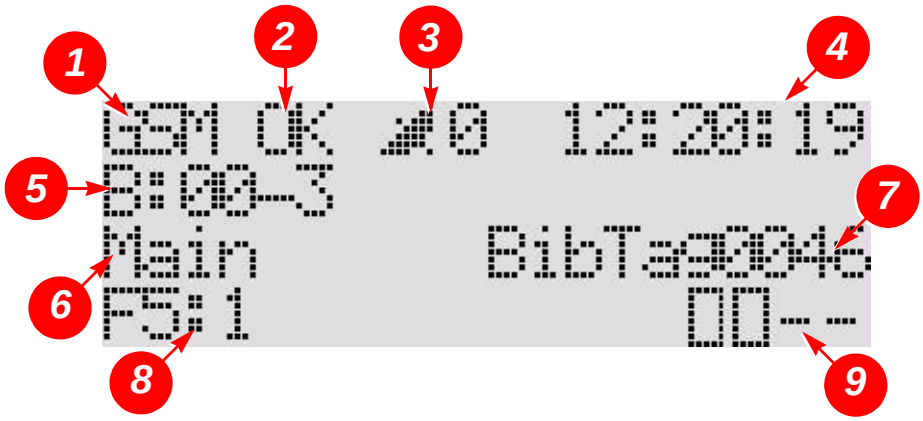
4.3.1 Operator controls

1	Display (showing Main screen)	See *4.3.2 Main Screen* on page 18
2	Left button (→)	For accessing and navigating through the operating menu (see *4.4 Menus* on page 19); also used to move between field selections in a screen
3	Right button (•)	For accessing the Info screens (see *4.5 Info screens* on page 31); also used for confirming menu selections and field selections

Figure 4.3 Operator controls

NOTE: *Additionally the POWER button is used to activate the Decoder (with LED to show on/off status)*

4.3.2 Main Screen



1	Connection indication	Can be NET, GSM or nothing (see *4.4.4 Communication* on page 27)
2	Status of connection	Can be OK or ER (error)
3	Number of detected satellites	The symbol indicates if GPS satellites are detected and how many. The symbol can change shape as follows: - NC = not connected - open symbol = satellite detected but no time available - blinking symbol = waiting for a time to be assigned - closed symbol = using GPS time - a clock symbol means that you can assign a manual time
4	Current time	Can be the time applied manually or the time assigned by the GPS connection
5	Message	A short message indicating the last BibTag that has been detected or the current status (can be an error situation see *8.3 Errors during operation* on page 54)
6	Profile	Indicates the profile assigned to the decoder (Main, Backup or Scanner)
7	Name of decoder	Identifies this decoder (see *4.4.3.3 Name* on page 26)
8	File	Identifies the file number currently being used and the number of bibtags in the file
9	Antennas	The array of antenna mats currently installed to the decoder: - enabled and detected mats are shown as an open rectangle ▯ - mats activated by a chip are shown as a filled rectangle ▮ - enabled mats that are not detecting are shown as a blinking '**X**' - antenna connectors with no mat connections are shown as — - antenna connectors shown as a dashed rectangle ⁚⁚ cannot be detected (this also signifies the decoder is in scanner mode)

Figure 4.4 Main screen

NOTE: *The backlighting for the screen will flicker if there is an error present.*

From the Main screen, use the → and right • buttons to navigate to the operator MENU and INFO screens:

- Press → to show the menu options (refer to *4.4 Menus* on page 19 for a description of all the menu functions)
- Press • to access the info screens (refer to *4.5 Info screens* on page 31 for a description of all the info screens)

NOTE: *If the operator does not make a selection within a few seconds, the operator MENU and INFO screens will automatically revert to the Main screen (exceptions are the Gun, Marker and Clock menu selections).*

4.4 Menus

Figure 4.5 shows the menu structure for the BibTag control system (navigate through the selections with → and choose a selection with •).

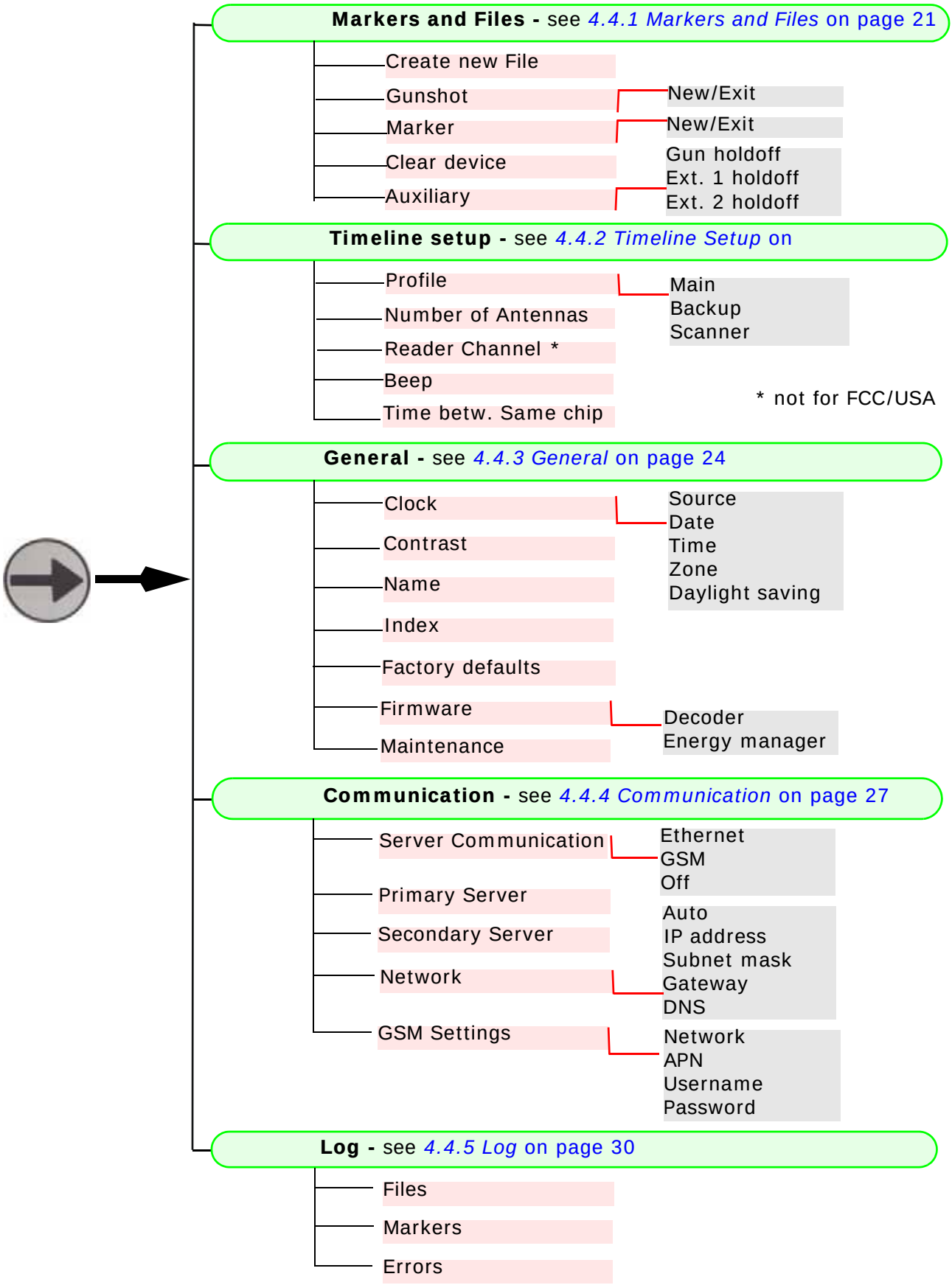


Figure 4.5 Operator menu structure

4.4.1 Markers and Files

Choose here to:

- Create a new file
- Set a gunshot or a marker
- Clear the device memory
- Use an ‘Auxiliary’ menu to enter a delay time for the gunshot or marker device

4.4.1.1 Create New File

Choose `Markers and Files > Create New File`

This function is useful for separating the detected chips times into individual files (e.g. it can be used to record multiple races after each other). A maximum 999 files can be created.

4.4.1.2 Gunshot

Choose `Markers and Files > Gunshot`

This function is useful for manually registering a start gun time at the beginning of a race.

Choose ‘New’ to register a gunshot (choose ‘Exit’ to leave the screen without registering a gunshot).

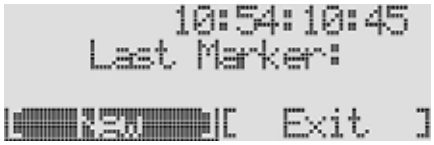
See *4.4.1.5 Auxiliary* on page 22 for information on how to set a delay for the gunshot.

4.4.1.3 Marker

Choose `Markers and Files > Marker`

Choose here to set a marker at a random point.

Choose ‘New’ to register a marker (choose ‘Exit’ to leave the screen without registering a marker).



See *4.4.1.5 Auxiliary* on page 22 for information on how to set a delay for the marker.

4.4.1.4 Clear device

Choose `Markers and Files > Clear device`

Important: Make sure all recorded BibTag passings are copied to a PC or memory device before clearing.

Here you can delete all passings (BibTags that have been detected), files and markers from the detector memory.

Confirm the delete action as follows:

1. Press → to choose ‘Clear’ (choose ‘Cancel’ if you wish to cancel the selection).
2. Press • to confirm the delete.
3. Wait until the message ‘Clearing device…’ disappears and you return to the main screen.

4.4.1.5 Auxiliary

Choose `Create Marker and File > Auxiliary`

Assign here the various delay times (in milliseconds) for a start gun, or any other External device attached to the decoder I/O port. Navigate through the menu selections with → and choose a selection with •.

Once in the appropriate screen (see example of Gun holdoff below), change the assigned delay time as follows:

1. Use • and → to enter the required delay time and move to 'Accept'.
2. Press • to accept and return to the main screen (choose 'Cancel' if you wish to cancel the selection).

4.4.2 Timeline Setup

Choose here to assign:

- Profile
- Number of antennas
- Reader channel *
- Beep (on/off)
- Time between same chip

* Reader channel is not available for USA/FCC systems

4.4.2.1 Profile

Choose `Timeline > Profile`

Here you can assign whether your decoder is used as a main or backup system, or as a scanner.

- Main and backup systems are set up in two rows at a recommended distance of 3 m (10 ft) from each other (see examples in *Figure 4.2*). Main and backup decoders are mostly used at start/finish lines to guarantee accuracy and ensure that all chip times are registered.
- A scanner assigned decoder can be used to check bibtags (never use this setting when the decoder is used in a race)

The first array of mats that is passed is normally assigned as 'main' and the second array is assigned as backup. The backup system has less precise timing but is more sensitive for weak chip signals.

Change the selection as follows:

1. Press • to choose the required setting (Main, Backup or Scanner).

2. Press → to confirm the setting and move to the next field ‘Accept’.
3. Press • to confirm and return to the main screen (choose ‘Cancel’ if you wish to cancel the selection).

4.4.2.2 Number of Antennas

Choose `Timeline > Number of antennas`

Assign here the number of antennas connected to your decoder (1 to 8).

NOTE: *A 4-meter system with a maximum 4 antennas is also available*

Change the Number of Antennas as follows:

1. Press • repeatedly to increase the number of antennas until the correct number is shown.
2. Press → to confirm the number and move to ‘Accept’.
3. Press • to accept and return to the main screen (choose ‘Cancel’ if you wish to cancel the selection).

4.4.2.3 Reader Channel

Choose `Timeline > Reader Channel`

Assign here the channel used by the reader to gather data. Always assign a different channel to a main and backup system to eliminate interference between decoders in close proximity. Also always assign a different channel to each of the 2 readers installed in an 8 antenna system.

Change the Reader Channel as follows:

1. Press • repeatedly to assign the required symbol to the blinking field.
2. Press → to confirm the symbol and move to the next field.
3. Press • repeatedly to assign the required symbol.
4. Press → to confirm the symbol and move to the ‘Accept’ field.
5. Press • to confirm and return to the main screen (choose ‘Cancel’ if you wish to cancel the selection).

4.4.2.4 Beep

Choose `General > Beep`

Here you can set the decoder beeper on or off.

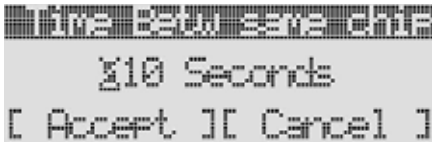
Do this as follows:

1. Press • to select on or off.
2. Press → to confirm the selection and move to ‘Accept’.
3. Press • to accept and return to the main screen (choose ‘Cancel’ if you wish to cancel the selection).

4.4.2.5 Time Between Same Chip

Choose `Timeline > Time Betw. Same Chip`

This setting prevents a chip being accidentally and repeatedly registered while still in the vicinity of the antennas. If a chip is detected more then once within this interval, each new registration will be neglected until the interval is over.



Change the time between the same chip as follows:

1. Press ● to increase the number of seconds (default is 10; min is 3; max is 30).
2. Press → to confirm the symbol and move to the next field 'Accept'.
3. Press ● to confirm and return to the main screen (choose 'Cancel' if you wish to cancel the selection).

4.4.3 General

Choose here to assign:

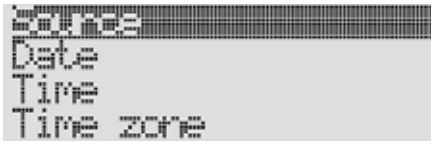
- Clock
- Contrast
- Name
- Index
- Factory defaults
- Firmware
- Main tenace

4.4.3.1 Clock

Choose `General > Clock`

Here you can set the source (GPS or manual), date, time time zone, and daylight saving for the decoder.

IMPORTANT: Never change 'Clock' parameters during a race

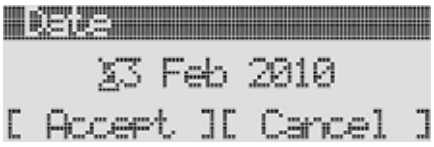


Source

1. Press ● to select 'Manual' or 'GPS' depending on how you wish to assign your clock settings.
2. Press → to enter the setting and move to 'Accept'.
3. Press ● to accept and return to the main screen (choose 'Cancel' if you wish to cancel the selection).

Date

1. Press ● to select 'Date'.
2. Press ● and → to enter the correct date and move to 'Accept'.
3. Press ● to accept and return to the main screen (choose 'Cancel' if you wish to cancel the selection).



Time

1. Press → and ● to select 'Time'.
2. Press ● and → to enter the correct time and move to 'Accept'.
3. Press ● to accept and return to the main screen (choose 'Cancel' if you wish to cancel the selection).

Time zone

1. Press → and ● to select 'Time Zone'.
2. Press ● and → to enter the correct time zone and move to 'Accept'.
3. Press ● to accept and return to the main screen (choose 'Cancel' if you wish to cancel the selection).

Daylight saving

1. Press → and ● to select 'Daylight Saving'.
2. Press ● and → to choose between 'off' and 'on', and move to 'Accept'.
3. Press ● to accept and return to the main screen (choose 'Cancel' if you wish to cancel the selection).

4.4.3.2 Contrast

Choose `General > Contrast`

Here you can alter the brightness of the BibTag operator screen.

Do this as follows:

1. Select [-] and press ● repeatedly to dim the screen.
2. Select [+] and press ● repeatedly to brighten the screen.
3. Press → to confirm the contrast and move to the 'Accept' field.
4. Press ● to accept and return to the main screen (choose 'Cancel' if you wish to cancel the selection).

4.4.3.3 Name

Choose `General > Name`

Here you can assign a personalized name for easy identification when the BibTag is connected to a network. This name will be displayed on the main screen, and in the MYLAPS software.

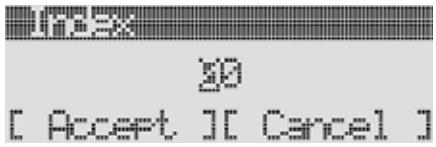
Change the name as follows:

1. Press ● repeatedly to assign the required symbol (alphabetic or numeric) to the blinking field.
2. Press → to confirm the symbol and move to the next field.
3. Repeat steps 1 and 2 until the name is correct.
4. Press → until 'Reset' is selected and press ● to confirm and return to the main screen.

4.4.3.4 Index

Choose `General > Index`

Here you can assign an index (maximum 2 characters) for the bibtag to identify the decoder in software.



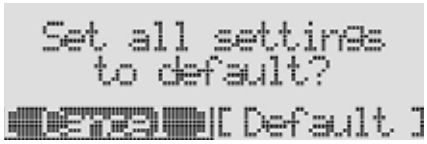
Change the index as follows:

1. Press ● repeatedly to assign the required symbol (alphabetic or numeric) to the blinking field.
2. Press → to confirm the symbol and move to the next field.
3. Press ● repeatedly to assign the required symbol (alphabetic or numeric).
4. Press → to confirm the symbol and move to the 'Accept' field.
5. Press ● to confirm and return to the main screen (choose 'Cancel' if you wish to cancel the selection).

4.4.3.5 Factory defaults

Choose `General > Factory defaults`

Here you can reset all the software settings in the decoder to their default factory settings.



Confirm the reset action as follows:

1. Press → to choose 'Default' (choose 'Cancel' if you wish to cancel the selection).
2. Press ● to confirm the reset.

4.4.3.6 Firmware

Choose `General > Firmware`

Here you can switch the current software version (to a previous version) and view the current 'Energy Manager' software version.

View Energy manager by pressing → and then •.

Switch software version as follows:

1. Press • to choose 'Decoder'.
2. Press → to choose 'Switch' (choose 'Cancel' if you wish to cancel the selection).
3. Press • to switch the software versions.

4.4.3.7 Maintenance

Choose `General > Maintenance`

This function is only to be used by a MYLAPS service engineer, or after contact with MYLAPS.

Enter the maintenance code as follows:

1. Press • repeatedly to assign the required character (alphabetic or numeric) to the blinking field.
2. Press → to confirm the character and move to the next field.
3. Repeat steps 1 and 2 to enter all four characters for the required code.
4. Press • to accept the address (choose 'Cancel' if you wish to cancel the selection).

4.4.4 Communication

Choose here to assign:

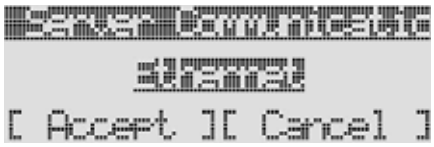
- Server communication
- Primary Server
- Secondary Server
- Network
- GSM Settings

When setting up BibTag for the first time, register your decoder at the CCNet server - refer to http://partner.mylaps.com for more information (go to 'Download > Networking Championchip equipment'.

4.4.4.1 Server Communication

Choose `Communication > Server Communication`

Here you can assign the method (Ethernet, GSM or off) for connecting to a server.



- Off means that communication to Toolkit is via LAN
- Ethernet or GSM means that communication to Toolkit is via WAN (using the MYLAPS server as intermediate)

Make a selection as follows:

1. Press ⊙ to select ‘Ethernet’, ‘GSM’ or ‘off’.
2. Press → to confirm the selection and move to ‘Accept’.
3. Press ⊙ to accept and return to the main screen (choose ‘Cancel’ if you wish to cancel the selection).

4.4.4.2 Primary Server

Choose `Communication > Primary Server`

Here you can enter a server address for the 'CCNetServer' for your region - check with your MYLAPS account manager for a list of local CCNetServer addresses.

NOTE: *You can assign a second* 'CCNetServer' *address in the Secondary Server menu selection (see section 4.4.4.3).*

When communicating, the software will search for the primary server; if not found, the software will search for the ‘Secondary server’ address.

Change a server address as follows:

1. Press ⊙ repeatedly to assign the required character (alphabetic or numeric) to the blinking field.
2. Press → to confirm the character and move to the next field.
3. Repeat steps 1 and 2 to enter characters for the required address (maximum 20 characters)
4. When the address is complete press → to move to the ‘Accept’ field.
5. Press ⊙ to accept the address and return to the main screen (choose ‘Cancel’ if you wish to cancel the selection).

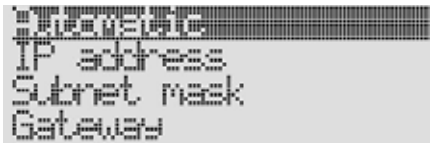
4.4.4.3 Secondary Server

Choose `Communication > Secondary Server`

Here you can enter a second server address for the 'CCNetServer' for your region. See section 4.4.4.2.

4.4.4.4 Network

Here you can assign all the specifications for the network connection. Choose ‘Automatic’ to ask the software to assign the address automatically; alternatively you can manually set the IP address, Subnet mask and Gateway.



Automatic

Choose ‘on’ for an automatic search for the network; set to ‘off’ before manually assigning IP address, etc.

IP address

Always first set ‘Automatic’ to ‘off’ before you can assign fixed IP settings.

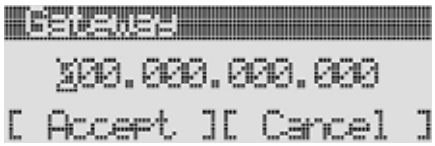
NOTE: *The decoder cannot register IP addresses in the 198.51.100.x series*

Subnet mask

Always first set ‘Automatic’ to ‘off’ before you can assign Subnet Mask settings.

Gateway

Always first set ‘Automatic’ to ‘off’ before you can assign Gateway settings.



Primary DNS

Always first set ‘Automatic’ to ‘off’ before you can assign DNS settings.

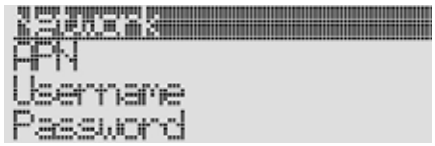
Secondary DNS

See ‘Primary DNS’.

4.4.4.5 GSM Settings

Choose `Communication > GSM Settings`

Always first set ‘Server Communication’ to ‘GSM’ - see *4.4.4.1 Server Communication* on page 28



Here you can configure the GSM (wireless modem) settings of the Modem/GSM unit. Settings must be obtained from your GSM provider and entered in the following screens:

- Network (Automatic or Manual)
- APN (Access Point Name)
- Username
- Password

Configure GSM as follows:

1. First press ● to select Network.
2. Press ● to choose ‘Manual’.
3. Press → to accept (choose ‘Cancel’ if you wish to cancel the selection).

Now select APN:

4. Press ● repeatedly to assign the required character (alphabetic or numeric) to the blinking field.
5. Press → to confirm the character and move to the next field.
6. Repeat these steps to enter characters for the complete name (maximum 20 characters)
7. When the address is complete press → to move to the ‘Accept’ field.
8. Press ● to accept the address and return to the main screen (choose ‘Cancel’ if you wish to cancel the selection; choose ‘CL’ if you wish to clear the name).
9. Repeat the same steps for ‘Username’ and ‘Password’.

When setting up BibTag for the first time, register your decoder at the CCNet server - refer to http://partner.mylaps.com for more information (go to 'Download > Networking Championchip equipment'.

4.4.5 Log

Here you can view the archive of Files, markers and errors

4.4.5.1 Files

Choose `Log > Files`

Choose ‘Next’ to view the next file.

4.4.5.2 Markers

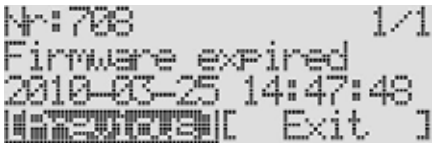
Choose `Log > Markers`

Choose 'Previous' to view previous marker.

4.4.5.3 Errors

Choose `Log > Errors`

Choose 'Previous' to view previous error.



4.5 Info screens

From the Main screen, press the ⊙ button repeatedly to navigate through the various INFO screens and eventually return to the main screen.

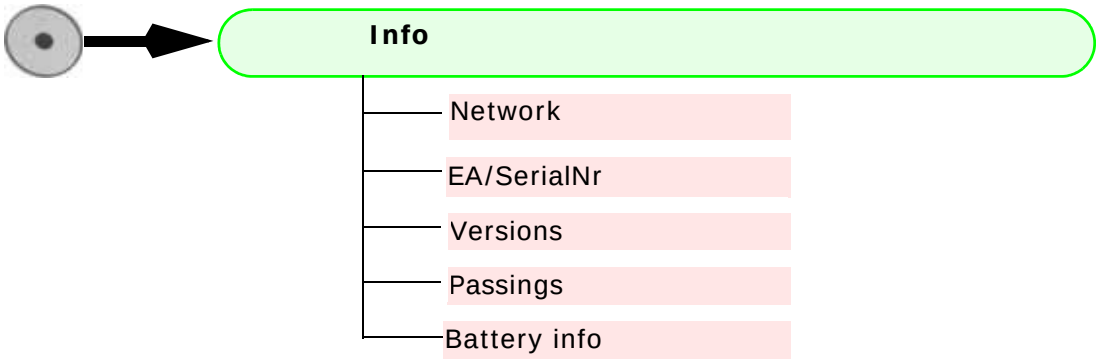


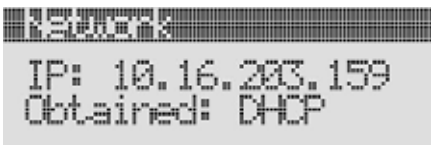
Figure 4.6 Info screens

4.5.1 Network

Choose ⊙ repeatedly until `Network` appears.

Here you can read off the IP address for the connection to the decoder.

Press ⊙ repeatedly to return to the main screen.



4.5.2 EA/SerialNr

Choose repeatedly until `EA/SerialNr` appears.

Here you can read off the EA/Serial number (MAC address) for the decoder.

Press repeatedly to return to the main screen.

4.5.3 Versions

Choose repeatedly until `Versions` appears.

Here you can read off the current BibTag software version installed in the decoder (and the previously installed 'passive' version, if present).

Press repeatedly to return to the main screen.

4.5.4 Passings

Choose repeatedly until `Passings` appears.

Here you can read off the number of passings (Bibtag detections) recorded by the decoder.

Press repeatedly to return to the main screen.

4.5.5 Battery info

Choose repeatedly until `Battery info` appears.

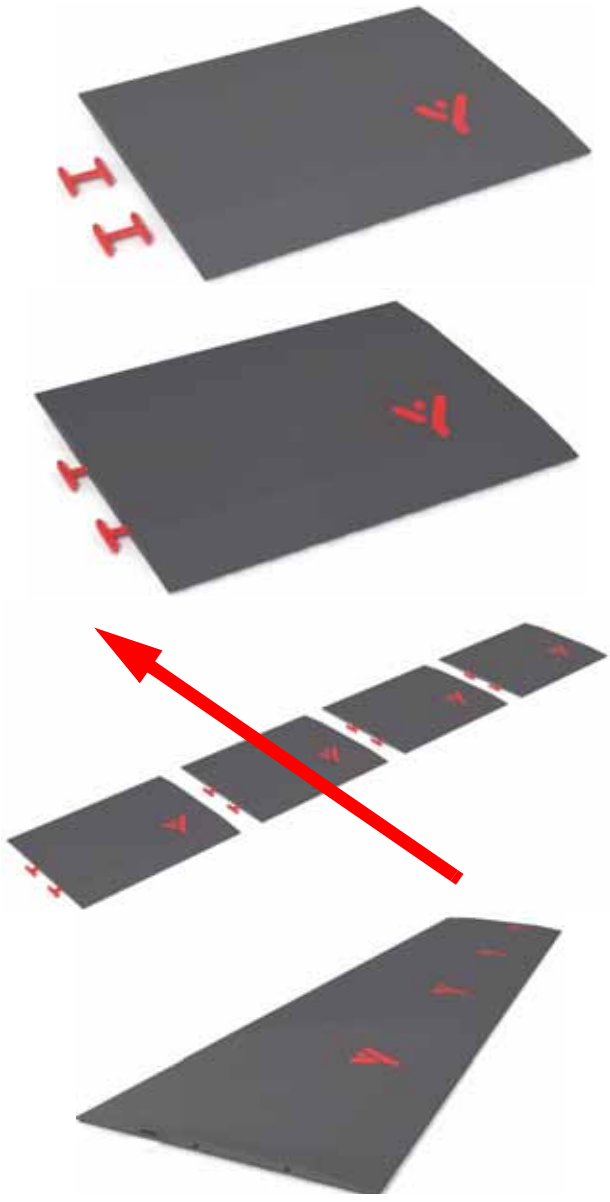
Here you can read off all the details about the internal battery (or external battery if connected). This information includes voltage, remaining charge and capacity.

Press to return to the main screen.

5 SETUP AND REMOVAL

This section describes how to setup the BibTag equipment for a race, and then to remove it after a race. Also described here is how to retrieve race data from the BibTag Decoder (see *5.2 Removal and storage* on page 39).

5.1 Setting up BibTag

1	Choose suitable number of mats (1 to 8) • Measure the total width of the timing location (start/finish/split line) • Select the number of mats to span this width - each mat is 1 meter (3 ft) wide	
2	Lay out mats • Remove the two plastic dogbone connectors from their recess under the mats • Slot the connectors into place in the recess at the end of each mat (make sure the connectors are facing in the same direction in the mats) • Lay out the mats lengthwise in a straight line across the timing line with the connectors facing the adjacent mat (align the mats in the direction that the athletes will run as shown by the arrow in figure) • One-by-one lift the ends of each mat and connect it securely with the connecting joints to the adjacent mat - each joint should fit precisely into the recesses at the end of the adjacent mat (remove the end 2 connecting joints if required)	

3 Position the BibTag decoder

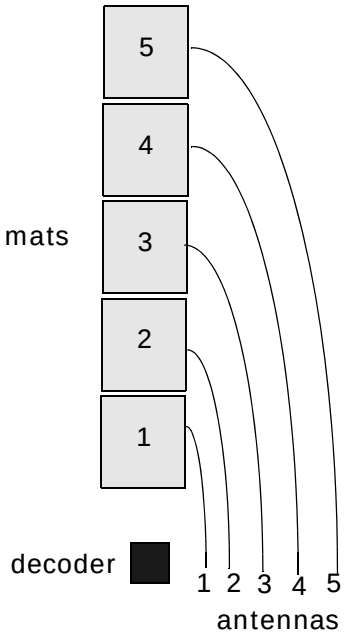
- Place the decoder approximately 1 meter (3 ft) from the end of the mats
- The decoder can be positioned at either end of the mat array where it will not hinder competing athletes

CAUTION

Damage:
Danger of damaging cables. Always take special care when handling the antenna cables as they are easily damaged. Never excessively bend or twist them, and make sure the connectors are kept dry.

4 Prepare antenna cables

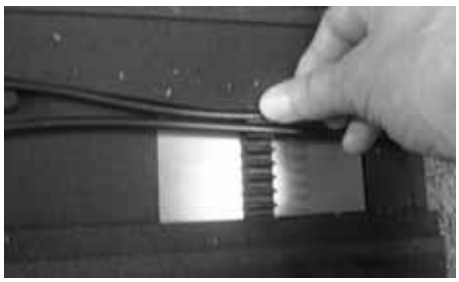
- Select the correct number of antenna cables for the map setup; e.g. if you are using 5 mats, select the 5 antenna cables to correspond with the mat (cables numbered 1 to 5)



5 Insert antenna cables in mats

- Lift all mat flaps
- Take the shortest antenna cable and lay it from the decoder location to the middle of the first mat of the mat array

- Connect the cable to the antenna in the middle recess in the mat; align the cable in the cable groove in the mat in the direction of the decoder
- Take the next longest antenna cable (no. 2) and lay it over the mats from the decoder to the middle of the second mat of the mat array

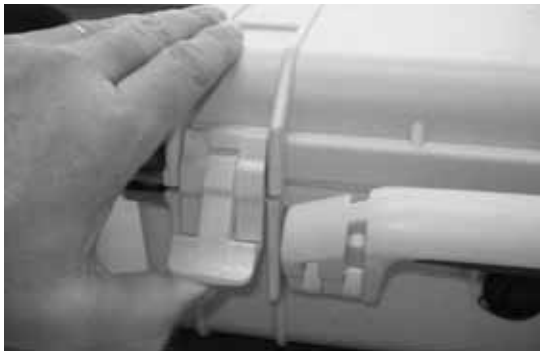
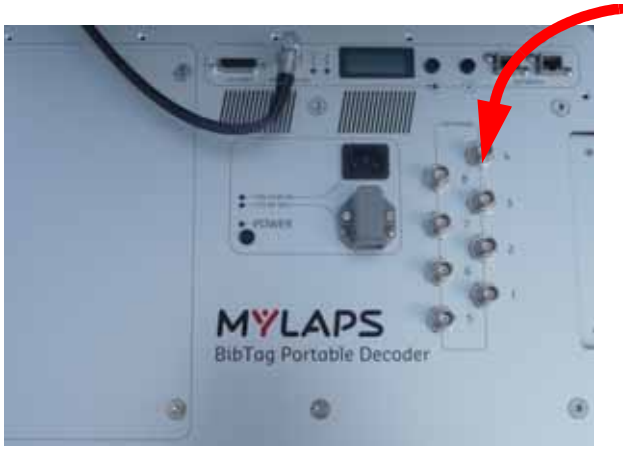
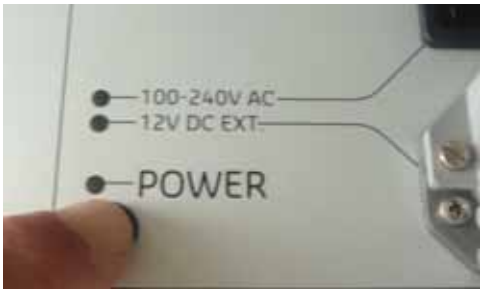


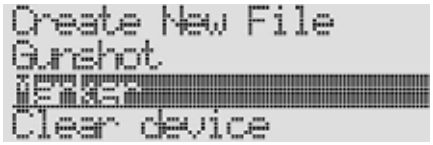
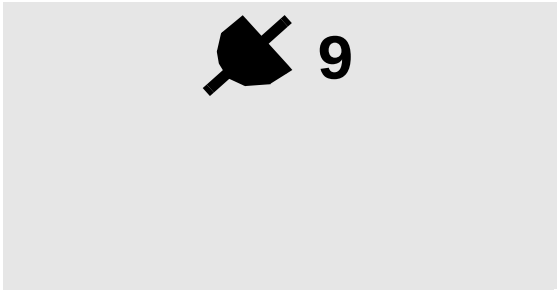
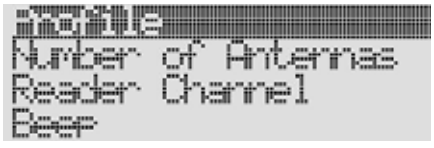
- Connect this cable into the antenna in the middle recess in the second mat
- Align the antenna cable in the cable groove in both mats in the direction of the decoder
- Repeat these steps for the remaining mats until all mats have a cable installed, and all cables are slotted correctly into the cable grooves
- Close all flaps

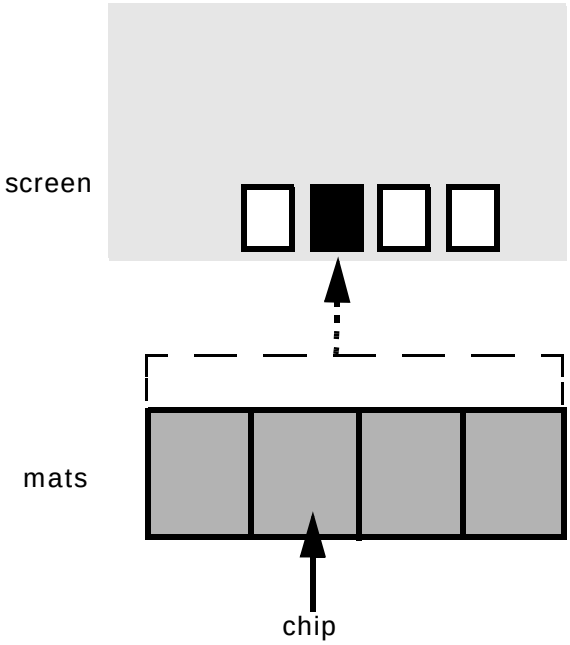
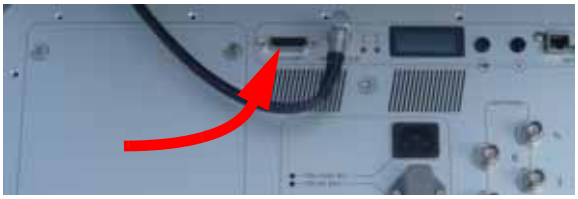
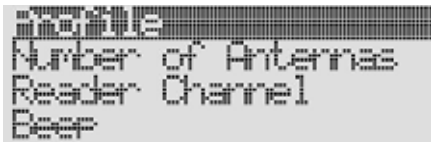
- Ensure all mat flaps are correctly closed with the magnetic strip and no flaps protrude

CAUTION

Damage:
Danger of short circuiting decoder electrics. Always take special care that no water enters an opened decoder case as the connections are not completely waterproof and water may damage the internal electric circuitry. Never open the decoder case in damp conditions.

6	Click open both front latches on the decoder case and carefully open the lid	
7	Connect antennas • Plug the antenna cables into the coax antenna connectors on the decoder (make sure the antenna cables are connected in their correct number sequence (i.e. cable 1 to antenna 1; cable 2 to antenna 2, and so on)	
8	Check external connections • Check that the modem/GPS unit is connected to the modem/usb connector on the panel • Connect any other required devices (e.g. starting gun to I/O port, laptop to network connector)	
9	Switch on Power • Press the Power button • Wait until the Main screen appears on the control panel (this screen is described in *4.3.2 Main Screen* on page 18)	

10	Check Main screen • Check that no errors are displayed on the screen - if so, refer to *8 Troubleshooting* on page 54 for how to solve them	
11	Check battery level • Check the battery level (shown on the LED panel on the front of the case) • If battery level is low ('E' LED is lit), supply external power by connecting a 12 VDC supply to the connector on BibTag panel (you can also connect a 100-240 VAC supply if available)	
12	Clear data in BibTag memory • Make sure the previous race data has been read and stored • Access the 'Files and Markers' menu • Choose 'Clear Device' • Select 'Clear' and confirm ***NOTE:*** *Another possibility here is to clear the memory using Toolkit - see the Toolkit User Manual for more information*	
13	Synchronize time with GPS • Verify if GPS is available (may take several minutes) - eventually the 'satellite' logo and number of satellites is displayed on the top line of the screen • If no GPS signal is available, reposition the BibTag Modem/GPS unit for better satellite reception (remove it from its straps in the decoder case) • Wait until time is synchronized • If no GPS signal is available, set the correct time on the internal clock (see *4.4.3.1 Clock* on page 24)	
14	Check time zone • Ensure the correct time zone is used (and daylight saving, if required)	
15	Configure the 'Detection' parameters by using the Timeline menu selections to configure: • Time Betw. Same Chip • Reader channel • Number of antennas • Profile - Main or Backup (see *4.4.2.1 Profile* on page 22)	

16	Test BibTag by carrying a test BibTag across each of the antenna mats, in turn, and check: • The BibTag is registered by the decoder (the detection LED is lit) • The antenna symbols in the bottom of the screen show that the BibTag is detected by the individual antennas. As the BibTag is carried across a mat, the block symbol for that mat should show a full symbol. See example figure where BibTag is carried over the second mat. ***NOTE:*** *The block signal will slowly 'empty' after a few seconds* • The time and date settings are correct on the BibTag system and on your results computer (if connected) • Replace or reconnect any faulty antennas and repeat the test	
17	Set up communication • Select menu 'Communication' • Choose appropriate communication method for your situation - see *4.4.4 Communication* on page 27 for more on communication	
18	Attach starter pistol (optional) • If required, attach a starting pistol (and/or other triggers) to the I/O port on the BibTag panel	
19	Configure 'Beeper' • If required, use the 'Timeline setup' menu selections to configure the beeper to Off (default is On)	
20	Close case • Make sure that the antenna cables are all aligned in the cutout on the right side of the decoder case • Carefully close lid (making sure no cables are trapped between cover and case) • Click closed both front latches to make sure the case is tightly closed and no dirt or moisture can enter	

5.2 Removal and storage

1	Retrieve race data (if not already done): • Refer to *6.5 Retrieve data* on page 44 to see how to retrieve data (race results) from the decoder • If no data connection to a Toolkit system is immediately available, data can be retrieved later (the decoder retains all data in memory even when power is off).	
2	Switch off power • Press 'Power' button • Choose "Confirm'' on menu ***NOTE:*** *Pressing the 'Power' button for 5 seconds will also power down the system*	
3	Disconnect cables • Remove antenna cables from their connectors on case • Remove power cable (if connected) • Remove Ethernet cable (if connected) • Remove starter pistol cable from I/O port (if connected)	

CAUTION

Damage:
Danger of damaging cables. Always take special care when handling the antenna cables as they are easily damaged. Never excessively bend or twist them, and make sure the connectors are kept dry.

4	Disassemble antennas • Carefully remove antennas from their slots in the antenna mats • Loop the cables and load them into their carry bags • Load all other cable accessories into their carry bags	

5 Disassemble mats

- Carefully lift the mats one-by-one so that they separate from the adjacent mat
- If required, remove the protruding dogbone connectors from their slots; do this by twisting the connectors in their recess before lifting them clear

  NOTE: *Leaving the dogbone in its protruding position is often useful as a handle to easily carry the mats*
- Insert the dogbones into their storage recesses in the back of the mat
- Remove the mats

6 Close case and remove equipment

- Carefully close lid (making sure that nothing is trapped between cover)
- Click closed both front latches
- Remove the BibTag equipment to a storage area (see step 7) or to an area where race data can be retrieved (see *6.5 Retrieve data* on page 44).

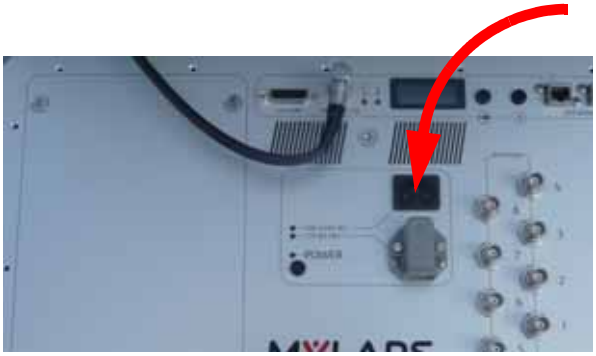
7 Store case in a dry area at storage temp of 0 °C to +40 °C (+32 °F to +104 °F), and close to a mains power socket

CAUTION

HIGH VOLTAGE:
Danger of electrocution. Before connecting power to the BibTag, make sure that all electrical connections are secure.

8 Charge BibTag

- Attach 100 - 240 VAC power cable into AC connector on case
- Connect the power cable into the mains power socket
- Leave power connected until BibTag is next required (the battery will be automatically charged so it stays fully charged)

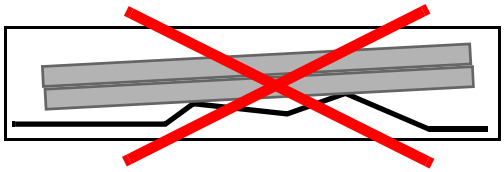


CAUTION

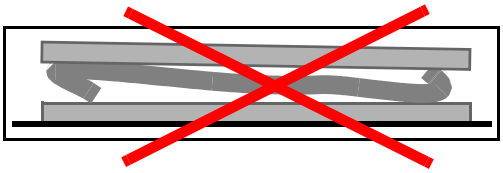
Damage:
Danger of damaging mats. Always store the mats according to the instructions given in the following step.

9 Store mats

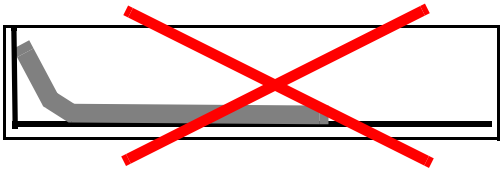
- Make sure that the storage area used for the mats is flat with no sharp or protruding surfaces



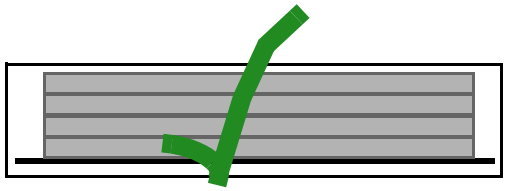
- Never bend the mats and make sure the corners are not twisted under the mat



- Never lean the mats against a wall so that they are bent and deformed



- Always store the mats laid out flat with the MYLAPS logo facing up



6 OPERATION

Once correctly setup, the BibTag system is ready to automatically record the chips as they pass the measuring point.

The following operation steps may be required:

- Set up a new file for the race - see *6.1 Create New File* on page 42 for more details
- If an electronic starting pistol is connected to the BibTag case I/O port, the start signal can be automatically recorded by the BibTag system when the pistol is fired - see *6.2 Gunshot* on page 43 for more details.
- Once the race is started, you can mark an individual time - see *6.3 Marker* on page 43.
- During the race, occasionally check the front panel LEDs for errors, and that the battery indicators show sufficient battery power (if required, you can connect a 12 VDC external battery to the 12 VDC connection on the BibTag case - see *6.4 Connect external battery* on page 44).
- At the race finish line, check status as competitors pass the antenna by making sure that they are detected (flashing LED and optional beep). You can also retrieve the race data as described in *6.5 Retrieve data* on page 44.

When ready you can remove the BibTag equipment as described in *5.2 Removal and storage* on page 39.

6.1 Create New File

This function is useful for separating the detected chips times into individual files (e.g. it can be used to record multiple races after each other). Use this function as follows:

1	Select Markers and Files > Create New File	
2	A message appears showing the time the new file is started. Use the operator buttons to select ‘OK’	

6.2 Gunshot

This function is useful for manually registering a start gun time at the beginning of a race. The BibTags detected within the antenna field at the gunshot time will all receive this official start time.

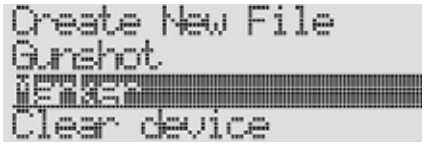
Never use the gun after the race is started because all new BibTag passings will be adjusted to the new gun times; always use the marker function during the race to mark a BibTag (see *6.3 Marker* on page 43).

Use the gun function as follows:

1	Select Markers and Files > Gunshot	
2	Use the operator buttons to select 'New'. A message appears showing the number of the gun marker and the time it was entered	

6.3 Marker

This function is useful to manually register a time during a race (e.g. recording the time for a competitor without a chip). Use this function as follows:

1	Select General > Marker	
2	Use the operator buttons to select 'New' A message appears showing the number of the marker and the time it was entered	

6.4 Connect external battery

CAUTION

EQUIPMENT DAMAGE
The BibTag will be seriously damaged if connected to an incompatible power supply.
Only connect the BibTag to a 12 VDC external battery.

Normally the internal battery (when fully charged) is sufficient for a race duration (maximum 12 hour for 8 mat systems; maximum 20 hour for 4 mat systems), however for longer races a 12 VDC external battery can be connected as follows:

1	Connect battery: • Attach leads to battery terminals (red to +; black to -) • Insert the battery connector into the socket on the BibTag panel and check the LED is lit	
2	Check the connection • Switch power on (if not already on) • Press the ● button to access the 'Info' selections • Choose 'Battery info' for the battery information screen • Ensure that the external battery symbol is showing, and the battery has sufficient charge (more than 20%)	

6.5 Retrieve data

Here you can choose from the following data retrieval methods:

- *6.5.1 Retrieving data (local network via Ethernet cable)* on page 45
- *6.5.2 Retrieving data (GSM)* on page 46
- *6.5.3 Retrieving data via internet (Ethernet)* on page 46

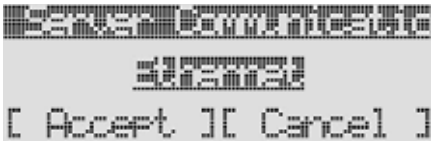
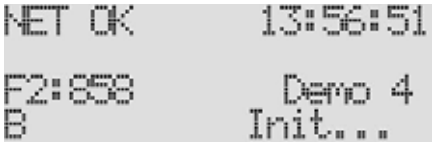
6.5.1 Retrieving data (local network via Ethernet cable)

1	Connect an Ethernet cable • Firmly click the cable into one of the two NETWORK connectors on the panel (always use a MYLAPS supplied Ethernet cable, or standard Ethernet UTP cable up to a max. 100 m (300 ft) long). • Check the orange LED on the NETWORK connection is on	
2	Choose Communication > Network From here you can select one of the following: • If you wish to automatically assign the network settings - go to step 3 • If you wish to manually assign the network settings - go to step 4	
3	Choose 'Automatic': • Select ‘on’ • Select ‘Accept’ • Continue at step 5	
4	Choose IP address: • If ‘AUTO’ is on, a new screen will appear asking you to ‘Disable AUTO first’ - do this by selecting ‘OK’ • Once in the IP screen, use the operator buttons to enter the IP address and choose ‘Accept’ • Do the same to manually assign the ‘Subnet mask', 'Gateway' and 'DNS' (Gateway and DNS are optional if an internet connection is not required or is not available) • Continue at step 5	
5	When connected to the network, use MYLAPS software (e.g. ‘Toolkit’) to retrieve data	

6.5.2 Retrieving data (GSM)

1	Select internet mode: • Choose menu 'Communication', then 'Server Communication' • Use the operator buttons to toggle from 'Ethernet' to 'GSM' and then select 'Accept'	
2	Check GSM connection • Return to the Main screen • Check the left of the top line is showing 'GSM OK' • If this does not appear within a minute, refer to *8 Troubleshooting* on page 54	
3	When connected, use the MYLAPS software (e.g. 'Toolkit') to retrieve data	

6.5.3 Retrieving data via internet (Ethernet)

1	Select internet mode: • Choose menu 'Communication', then 'Server Communication' • Choose 'Ethernet' to connect to the internet via your local server	
2	Check connection: • Return to the Main screen • Check that the top line is showing 'NET OK' • If this does not appear within a minute, refer to *8 Troubleshooting* on page 54	
3	When connected, use the MYLAPS software (e.g. 'Toolkit') to retrieve data	

7 MAINTENANCE

Only qualified and trained personnel should perform maintenance on MYLAPS equipment.

Maintenance can be described as, but not limited to:

- Checking and testing components
- Cleaning the unit and individual components - accumulated dirt can hamper unit operations
- Installing and removing parts from the unit
- Troubleshooting any malfunctions that may occur on the unit before, during and after operations
- Calibrating and adjusting settings on the unit

7.1 Periodic maintenance schedules

Use the following table to plan routine maintenance for your unit. If you are using the electronic version of this document, click the text or the page number to jump to the procedure.

Maintenance activity	Page	Service interval			
		daily	monthly	6-monthly	as required
Clean	48				●
Charge battery	49	●			
Check/Update software	50		●		
Calibrate battery indicators	51			●	
Remove/replace SIM card	52				●
Replace battery	53				●
Replace cables and antennas	53				●

7.2 Clean

1	Take a clean soft cloth and moisten it with clean water (do not use an abrasive cleaning liquid).	
2	Using gentle strokes, clean the inside of the case, including the display screen and antenna connectors. Dry off any excess moisture. Use a newly moistened cloth to clean the outside of the case, including the front LED display	
3	Use a moist cloth to clean the antenna cables, paying particular attention to remove any dirt in the connectors.	

CAUTION

ENVIRONMENTAL HAZARD
Plastic and other waste products are harmful to the environment. Dispose of waste items in a responsible, environment-friendly manner. Separate recyclable products from other, non-recyclable waste. Heed site regulations and obey local environmental by-laws

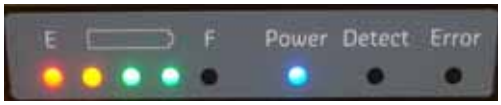
4	Dispose of the cleaning materials (check your local environmental regulations).	

7.3 Charge battery

1	Check that temperature of the charging location is within range 0 to +40 °C (+32 to +104 °F)	

CAUTION

HIGH VOLTAGE:
Before connecting power to the BibTag, make sure that all electrical connections are secure..

2	Connect cable: • Switch off BibTag decoder at main switch (you can leave the power on, but charging will take longer) • Attach 100 - 240 VAC cable into AC connector on display panel • Connect the power cable into the mains power socket	
3	Check the battery status at the front of the case: • The LEDs will gradually light from left to right as charging is in progress (last LED will blink) • Wait until battery is fully charged and all 5 LEDs remain lit (takes 5 to 10 hours from empty to full)	
4	Remove power (optional): • MYLAPS recommends leaving power connected to retain battery life and ensure the BibTag is fully charged and ready for its next use	

7.4 Check/Update software

1	Connect to a local internet provider via a cable connection or via GSM	
2	Access the MYLAPS support website and check if there is updated decoder firmware	
3	Update version (if required): • Follow the instructions on the support website to download and install the updated firmware	
4	Check update: • Confirm reboot to new version • Verify that new version works correctly (if problems occur, refer to section Troubleshooting)	

7.5 Calibrate battery indicators

1	Check that temperature of the charging location is within range 0 to +40 °C (+32 to +104 °F)	

CAUTION

HIGH VOLTAGE:
Before connecting power to the Decoder, make sure that all electrical connections are secure..

2	Fully charge the battery until the green 'F' lamp stays constantly lit (takes 5 to 10 hours from empty to fully charged)	
3	Deplete battery: • Disconnect power from the Decoder • Switch on the Decoder • Leave the Decoder running until the internal battery is completely empty (can take 24 hours from full to empty) • The Decoder will switch off automatically to prevent battery damage	
4	Fully charge the battery until the green 'F' lamp stays constantly lit (takes 5 to 10 hours from empty to fully charged)	

7.6 Remove/replace SIM card

CAUTION

Equipment damage:
To prevent damage to the SIM card and possible data loss, always disconnect the Modem/GPS unit before removing/replacing the card.
*Always correctly connect and disconnect the modem/GPS cable. Only handle the cable connector by holding it on the ribbed part of the connector; **never** pull on the cable.*
Also always take special care to prevent moisture entering the opened Modem/GPS unit, and take standard precautions to prevent ESD when handling electrical components.

1	Disconnect unit cable: • Place your fingers around the ribbed part of the connector (never disconnect it by pulling on the cable) • Press the connector with a vertical motion downwards • Remove the connector by pulling it with a smooth vertical motion upwards	
2	Remove unit: • Remove the unit from its attachment straps in the cover	
3	Remove unit cover: • Unscrew the 4 corner screws with a screwdriver • Remove the cover to expose the card holder	
4	Open card holder: • Slide down the front of the card holder slightly to release the holder • Flip the holder open to access the card	

5	Remove card: • Gently slide the old SIM card out of the holder • Leave the holder in its upright position	
6	Replace card: • Gently slide the new SIM card into the holder, making sure the cut-out corner is on the top left • Press the new card completely into place in the base of the holder	
7	Close holder: • Press the holder down into its closed position, making sure that the card is not bent or damaged • Slide down the front of the card holder to lock the holder	
8	Replace unit cover: • Place the unit cover back on the unit • Firmly screw in the 4 corner screws	
9	Replace unit: • Replace the unit in its attachment straps in the decoder cover, making sure that the label on the base of the unit is visible • Place your fingers around the ribbed part of the connector and press the connector with a vertical motion downwards into the connector (making sure it locks in place)	

7.7 Replace battery

Please contact MYLAPS for the procedure for replacing the battery.

7.8 Replace cables and antennas

Please contact MYLAPS for the part numbers and ordering instructions.

8 TROUBLESHOOTING

8.1 Troubleshooting principles

Troubleshooting for the BibTag can be divided into 3 distinct categories:

- Start up problems - see *8.2 Start up problems* on page 54
- Operating errors and warnings (signalled by screen messages) - see *8.3 Errors during operation* on page 54
- Problems with updating software - see *8.4 Problems with updating software* on page 59

If troubleshooting does not solve a problem, contact MYLAPS at support.nijmegen@mylaps.com. Alternatively, check the MYLAPS forum site for similar problems and solutions - see http://partner.mylaps.com

8.2 Start up problems

Normally when starting up the BibTag, the main screen will appear after the power button is pressed on the control panel. However, the following problems may be encountered during startup.

No power is available (no LEDs lit)

Connect power to the BibTag and check if the 'E' battery indicator is lit:

- If lit, charge the BibTag (see *7.3 Charge battery* on page 49) until the internal battery is sufficiently full (the second charge LED starts to blink)
- If battery indicator is not lit, contact MYLAPS

Start screen freezes

Restart (startup can take longer after a restart).

8.3 Errors during operation

If errors or warnings occur during operation, a flashing error message is displayed in the middle of the BibTag control screen. See location in following figure.

Figure 8.1 Error message on control screen

The red 'error' LED on the panel on the front of the case (and beside the control screen) will also glow continuously for an error - see location of red 'error' LED in following figure:

Figure 8.2 Error lamp

To acknowledge the error and clear the message, press the → or • buttons. In an extreme emergency situation, hold in the main power switch for 7 seconds to completely shut down the BibTag.

Errors can be caused by human, software, mechanical or electrical faults - read the message carefully, and decide upon the best course of action. The following table alphabetically lists the various operating errors as follows:

- Error text
- Possible Causes (in order of likelihood)
- Solutions to the listed causes (also in order of likelihood) with suggested procedure number (as listed in the Maintenance section of this manual)

Error	Problem(s)	Solution(s)
Ambient temperature too high to charge	Surrounding temperature too high to charge battery	Charge battery in correct temp. range - (see *7.3*)
Ambient temperature too low to charge	Surrounding temperature too low to charge battery	Charge battery in correct temp. range - (see *7.3*)
Antenna # lost Check antenna now	Antenna connection is faulty	Check the antenna connections
Battery error	Battery is not connected or has been shut down by temperature protection	Contact MYLAPS
Battery low	Warning that the battery charge level is becoming low	Connect to an external battery, or connect to AC power (if no other option)
Battery status read failed	Software error	Restart (see *7.8*)
Battery fuse broken	Battery fuse is faulty	Replace fuse
Battery temperature too high to charge	Battery temperature too high	Charge battery in correct temp. range - (see *7.3*)
Battery temperature too low to charge	Battery temperature too low	Charge battery in correct temp. range - (see *7.6*)
CCNet error Contact MYLAPS	Connection to the CCNet server is lost	Wait for BibTag to reconnect. If error occurs frequently, check GSM status or network connections
CCNet Unregistered Register device	Device is unregistered	Register the BibTag at the CCNet server - refer to http://partner.mylaps.com for more information
CCNet Auth failed Login OK?	Internet unavailable	Check APN, User name and password. Contact network provider
CCNet not found Server settings OK?	Internet unavailable	Check APN, User name and password. Contact network provider
Charge error high current	The measured charge current is too high	Connect alternative (110 - 240 VAC) supply. Contact MYLAPS if error repeats
Charge error low current)	The measured charge current is too low	Connect alternative (110 - 240 VAC) supply. Contact MYLAPS if error repeats
Chip queue at 75% save passings	Memory is becoming full	Save the current passings to Toolkit

Error	Problem(s)	Solution(s)
Chip queue at 90% save passings	Memory is becoming full	Save the current passings to Toolkit
Communication error Contact MYLAPS	Undefined	Contact MYLAPS
Decoder error Contact MYLAPS	Internal communication failed	Contact MYLAPS
Decoder time failed Contact MYLAPS	Internal communication failed	Contact MYLAPS
Decoder not found Contact MYLAPS	Internal communication failed	Contact MYLAPS
Decoder conn lost Contact MYLAPS	Internal communication failed	Contact MYLAPS
Decoder Re-read	Internal communication resync was required	Contact MYLAPS
EM Com error FE	Undefined	Contact MYLAPS
EM Com error OE	Undefined	Contact MYLAPS
EM Com error BRK	Undefined	Contact MYLAPS
External battery low	Warning that external battery charge level is low and BibTag will switch to internal battery supply	Connect to an extra external battery, or connect to AC power (if no other option)
Firmware will expire in 1 month	Firmware must be updated	Install new firmware (see section *4.4.3.6*)
Firmware expired Update now	Firmware must be updated	Install new firmware (see section *4.4.3.6*)
GPS	No communication is possible via GPS - no sync with GPS time.	Restart (see *7.8*)
Internal battery disconnected	Battery connection is disabled	Reconnect
Maintenance required battery voltage high	Battery has been charged at too high a current	Replace battery if message repeats (see *7.7*)
Maintenance required battery delta T	Battery has been loaded for too long	Replace battery if message repeats (see *7.7*)
Maintenance required battery capacity	Battery has been loaded for too long	Replace battery if message repeats (see *7.7*)
Old EM firmware Update firmware	Started wrong software version	Reload correct firmware (see section *4.4.3.6*)
Old reader firmware Update firmware	Started wrong software version	Reload correct firmware (see section *4.4.3.6*)

Error	Problem(s)	Solution(s)
Supply voltage load high	The measured supply current is too high	Connect alternative (110 - 240 VAC) supply. Contact MYLAPS if error repeats
Timing error Contact MYLAPS	Undefined	Contact MYLAPS
Unsupported decoder Contact MYLAPS	Internal communication failed	Contact MYLAPS
Update error Contact MYLAPS	Software problem	Contact MYLAPS
Version changed to Version x.x	Confirmation of a software update	Press operator button to acknowledge message

8.4 Problems with updating software

If a problem occurs with an updated software version, BibTag can revert to a working software version as follows.

1	Check BibTag is started: • If BibTag does not start correctly, restart to force a reboot with a working software version	
2	Update software and make sure you select a software version that previously ran correctly on your BibTag.	
3	Report software problem to MYLAPS.	

8.5 Reset to factory defaults

If required, BibTag can be reset to the original factory settings.

1	Access `General > Factory settings`	
2	Use the operator buttons to choose 'Default'	
3	The controller will automatically reboot with the factory defaults.	

8.6 GPS reception is weak or lost

Solve problems with a weak or lost GPS signal as follows.

1	Reposition the Modem/GPS unit so that it has a clear view of any possible satellites (not obstructed by buildings, trees, etc.)	
2	Check signal strength • Check the number of GPS satellites shown on the top of the screen (should be showing at least 3 satellites)	
3	Reposition the Modem/GPS unit again if necessary	

APPENDICES

This section contains the following appendices:

- *Appendix 1: Specifications* on page 62
- *Appendix 2: IO port pin settings* on page 64
- *Appendix 3: CE Declaration* on page 65

Appendix 1: Specifications

Decoder

Material	**Modified Pelican 1500 case**
Dimensions (B x D x H)	371 x 258 x 152 mm (14.61 x 10.16 x 5.98 in)
Weight (including accessories)	10 kg (22 lb)
AC input voltage	100 to 240 VAC at 50/60 Hz
Power consumption (charging)	60 W
Power consumption (charged)	2.5 W
Typical power consumption (operation)	7.2 W
Max. power consumption (operation)	12 W
Internal battery current	14.8 V / 40 Ah LiPo
Charge time (device switched off)	<5 hours
Charge time (device switched on)	<10 hours
Operating time (with full battery)	20 hours (4 mat system); 12 hours (8 mat system)
Operating temperature (charging)	0 to +40 °C (+32 to +104 °F)
Operating temperature (not charging)	-20 to +50 °C (-4 to +122 °F)
Storage temperature	-20 to +40 °C (-4 to +104 °F)
Relative humidity	Max. 90%, non-condensing
Pollution degree	III
Protection class (cover closed)	IP54
Protection class (cover open)	IP33
Safety norm	EN60950
Maximum chip passing speed	40 km/h (25 mph)
Maximum laid antenna dimension (W x L)	0.6 x 24 m (2 x 72 ft)
Max. unique chip detects	50/sec
Timing Resolution	0.004 sec
Clock tolerance	1 ppm
Maximum detection buffer size	80,000 chips
Life span	approx. 5 years

Modem / GPS unit

Dimensions (B x D x H)	100 mm x 70 mm x 40 mm (3.94 x 2.76 x 1.57 in)
Cable length	3 m (118 in)
Weight	350 g (0.77 lb)
Life span	approx. 5 years
Operating temperature	-20 to +50 °C (-4 to +122 °F)
Storage temperature	-20 to +40 °C (-4 to +104 °F)
GSM unit	Quadband (850/900/1800/1900 MHz), GPRS, EDGE
IP Protection Class	IP 65

Mat

Dimensions (Width x Length x Height)	1000 mm x 770 mm x 20 mm (39.3 x 30.3 x 0.79 in)
Weight	5 kg (11 lb)
Life span	approx. 3 years
Operating temperature	-20 to +50 °C (-4 to +122 °F)
Storage temperature	-20 to +40 °C (-4 to +104 °F)
IP Protection Class	IP 11

BibTag

Dimensions (Width x Height)	125 x 57 mm (4.92 x 2.24 in)
Weight	*customer dependent*
Life span	approx. 2.5 years (at room temperature)
Max. speed	40 km/h (25 mph)
Max. detection height	approx. 2 m (6.6 ft)
Operating temperature	-40 to +85 °C (-40 to +185 °F)
Storage temperature	-20 to +40 °C (-4 to +104 °F)
Protocol	EPCglobal Class 1, Gen 2 ISO 18000-6C
Power source	Integrated proprietary disposable battery
Operating frequency	860-960 MHz
IP Protection Class	IP 53

Appendix 2: IO port pin settings

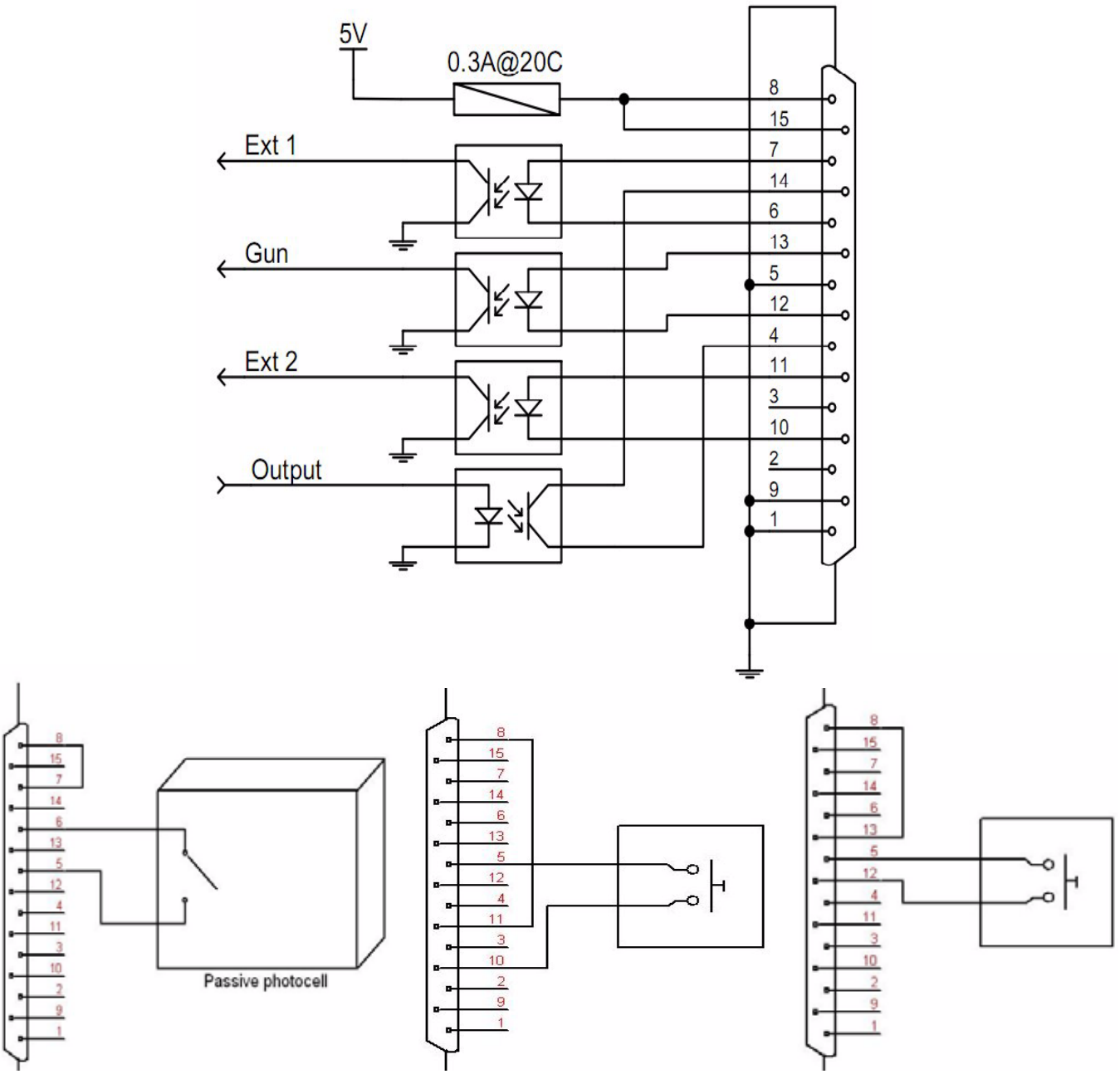


Figure 8.3 Pin settings

Function	Pin
ground	1, 5, 9
+5 V (max 300 mA)	8, 15
Ext 1 +	7
Ext 1 -	6
Gun +	13

Function	Pin
Gun -	12
Ext 2 +	11
Ext 2 -	10
output +	14
output -	4

Table 8.1 I/O port settings

Appendix 3: CE Declaration

CE DECLARATION OF CONFORMITY

We,

MYLAPS

Zuiderhoutlaan 4

2012 PJ Haarlem, The Netherlands

Declare that the UHF system

BibTag Portable Decoder

in accordance with the following directives:

2006 / 95 / EC	**The Low Voltage Directive**
2004 / 108 / EC	**The Electromagnetic Compatibility Directive**
1999/5/EC	**Radio & Telecommunications Terminal Equipment Directive**

has been designed and manufactured to the following specifications:

EN 301-489-1 (2005-09)

EN 301-489-3 (2002-08)

EN 302-208-2 (2008-04)

EN 61000-3-2 (2006)

EN 61000-3-3 (2008)

I hereby declare that the product named above is designed to comply with the relevant sections of the above referenced specifications, and all essential requirements of the Directives.

Name of authorized person:	John Verwoerd
Function of authorized person:	R & D Director
Place and Date:	Haarlem, 20 April 2010
Signature of authorized person:	

MYLAPS contact information:

For general information:

MYLAPS EMEA Office Haarlem
Zuiderhoutlaan 4
2012 PJ Haarlem
The Netherlands
Phone: +31 (0)23 529 1893
Fax: +31 (0)23 529 0156
info@mylaps.com

For information about BibTag:

MYLAPS Office Nijmegen
Havenweg 15
6541 AD Nijmegen
The Netherlands
Phone: +31 (0)24 379 1244
Fax: +31 (0)24 379 1245
info.nijmegen@mylaps.com

Worldwide support team

support.bibtag@mylaps.com

Worldwide sales

sales.nijmegen@mylaps.com

Local enquiries

Please contact your local distributor